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Three New Water Snakes of the Genus *Natrix* from Mexico Roger Conant¹

Recent investigations made upon series of water snakes from Mexico indicate there are three populations, a subspecies each of *Natrix erythrogaster*, *N. rhombifera*, *era*, and *N. valida*, that are not currently recognized. Since the publication of a rather lengthy review of the genus *Natrix* in Mexico, now in preparation, may be delayed, these new forms are described herewith. Such matters as detailed summarizations, variations, habitat notes, relationships, illustrations, etc., and acknowledgments to the many persons who have aided the study will be reserved for the forthcoming review.

The color patterns of the types described below were all recorded from life. Capitalized color names throughout the text are in accordance with Ridgway (1912) .

1. There is a population of water snakes living in the Rio Nazas, in extreme eastern Durango, which, although closely related to *Natrix erythrogaster transversa*, is sufficiently distinct to warrant subspecific recognition. For this **I** propose the name

***Natrix erythrogaster bogerti*, new subspecies²**

Holotype. American Museum of Natural History, No. 73163, an adult Y, collected September 29, 1949, in the Rio Nazas, near La Goma, approximately 15 miles southwest of Lerdo, Durango, by Roger Conant.

Paratopotypes. AMNH 67300, 73164-73170.

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² Named for Charles M. Bogert, of the American Museum of Natural History, who wrote to me from Mexico about this snake the day the first specimen was collected in 1946.

Diagnosis. A large *Natrix* with the following combination of characters: (a) pallid coloration; (b) head distinctly reddish in the temporal region (in adults) ; and (c) the lateral blotches reduced to narrow vertical bars.

In the subspecies *transversa* and in the young of all other races of *Natrix erythrogaster* (including *transversa*) , the lateral blotches are wide, normally involving the width of all or nearly all of two scales (counting in the direction of the longitudinal axis of the snake) . In *bogerti*, the blotches involve only the edges of two adjacent scales, and all really dark pigment is confined to the skin between the scales.

Description of Holotype. Head scutes the same in number and arrangement as in other races of the species. Two nasals, the anterior bearing the nostril entirely within it. Loreal subtrapezoidal, about as long as high. One preocular and three postoculars, the lowermost postocular extending well forward under the eye and nearly reaching the preocular. One temporal in the first row and three in the second row. Supralabials 8, the 6th and 7th the largest; the 4th entering the orbit. Infralabials 10, the 6th the largest, the first pair meeting on the midventral line; first 5 on each side in contact with the corresponding anterior chin shield. Two pairs of chin shields, the posterior slightly longer than the anterior.

Dorsal scales with two apical pits. Scale rows 23-25-23-21-19, all carinate throughout the length of body and tail. The increases and decreases, plus other data, may be expressed, according to the system proposed by Dowling (1951) , by the following formula:

$$23 \frac{+7(28)}{+6(27)} \quad 25 \frac{4+5(68)}{4+5(72)} \quad 23 \frac{4+5(98)}{4+5(99)} \quad 21 \frac{4+5(113)}{4+5(114)} \quad 19 \quad (146)$$

The ventrals, as indicated at the end of the formula, are 146, plus a divided anal plate; subcaudals 70 pairs. Tail terminated by a very short blunt spine. Total length 940 mm. ; tail length 226 mm. ; tail length/total length 24 per cent.

General dorsal coloration light buffy brown (Wood Brown) . The pattern features are almost entirely confined to the skin between the scales. When first captured, this snake was relatively thin, and its dorsum was virtually plain Wood Brown ; details of markings could only be demonstrated when the scales were pressed apart with the fingers. It grew fat in captivity, however, revealing a rather faint pattern of large middorsal blotches flanked by an alternating row of narrow vertical bars on each side of the body. The coloration of the skin *between the scales* may be summarized as follows: (1) between the middorsal blotches Light Buff ; (2)

between the lateral bars—Pale Olive-Buff; (3) within the area occupied p

by the middorsal blotches Cinnamon ; and (4) within the area occupied by the lateral bars very dark gray, almost black. The last-mentioned is the most conspicuous feature of the pattern ; the dark pigment follows the edges of the scales and produces a dark, vertical zig-zag in the center of each lateral bar.

The middorsal blotches, 39 in number from the head to a point directly above the anus, are 3 (rarely 2 or 4) scales long (in the longitudinal axis of the snake) and 10 to 13 (average 12) scales wide ; the blotches are irregular and partly coalesced in the neck region. The lateral bars involve the 2nd to the 7th rows of scales on the anterior part of the body and the 1st to the 4th or 5th posteriorly. They are one scale or less in width. They alternate with the dorsal blotches all the way forward to the head. All the markings are largest and most noticeable on the anterior part of the body; posteriorly they almost disappear. There are no markings on the tail, which is plain Buffy Brown on its upper surface. The snake has now faded somewhat in preservative, and close examination reveals that the majority of the scales are edged with pale gray, a fact that was not readily apparent during life.

Top of head Grayish Olive, mottled with Light Grayish Olive. A faint grayish stippled streak extending from the eye obliquely downward to the last upper labial. A light area (representing the parietal spots normally seen in small specimens and some adults of *transversa*) along the common suture of the parietals ; a median post-parietal light streak about the width of one scale and the length of a scale and a half. Temporal region distinctly reddish, being washed and flecked with Russet. The sutures between the labials (both upper and lower) are also Russet. Pupil of eye black, ringed with yellow; iris Grayish Olive (slightly darker than top of head) ; dorsal quadrant of iris slightly Russet. Tongue pink at base; tip olive gray.

The belly is a delicate blend of light Pinkish-Cinnamon and Ochraceous-Buff. The Cinnamon is strongest next to the dorsal scutes ; on most of the belly the Buff predominates. **The colors gradually become paler anteriorly, changing to pale cream on the throat, chin, and labials. The under side of the tail is similar to the belly, except that the colors become richer and more Cinnamon on the posterior half ; they become almost Tawny at the tip. There is no indication of pattern or markings of any kind on the ventral surface of the specimen.**

2. Clay described *Natrix rhombi f. era blanchardi* in 1938, selecting his holotype from near Tampico and basing the new form upon a total of ten specimens. These were from widely scattered localities ranging from west central Tamaulipas to southern Veracruz. He could not have known what is now readily demonstrable: There are three races of *rhombifera era*

inhabiting Mexico. *Natrix r. rhombi f era* is found in northern Coahuila, Nuevo Leon, and northern Tamaulipas; *Natrix r. blanchardi* occurs in the drainage systems of the Rio Pánuco and the Rio Tamesi (the Cuenca Rio Pánuco of Sanchez [1936, map 2]) ; and- there is an undescribed subspecies that ranges through central and southern Veracruz well into Tabasco. Clay inadvertently furnished a clue to this southern race by stating (*op. cit.*, p. 253) that a specimen from La Antigua, Veracruz, was "surprisingly similar to *N. r. rhombi f era*." Smith and Taylor, with more material at hand, noted that southern specimens resemble the typical form in pattern. They brought the matter into sharp focus by indicating, in their key to Mexican snakes, that *rhombi f era* ranges both to the north *and south* of *blanchardi* (1945, p. 155). Despite its similarity in pattern to *rhombi f era*, the southern population is distinct and I propose for it the name

Natrix rhombi f era werleri, **new subspecies** "

Hol oty pe. Private collection of Frederick A. Shannon, No. 3333, a young adult m collected February 8, 1953, on the Alvarado-San Andres Tuxtla road approximately 18 miles southeast of Alvarado, Veracruz, by John E. Werler.

Paratypes (listed by localities) . TABASCO: Emiliano Zapata, Rio Usumacinta (USNM 110511) . VERACRUZ: Alvarado (MCZ 16005-6) ; 5 mis. SE of Alvarado (UIMNH 33859) ; 18 mis. SE of Alvarado (AMNH 73481, FAS 3334-5) ; La Antigua (CNHM 2039 paratype of *N. r. blanchardi*) ; Jalacingo (AMNH 4293-4) ; 11 mi. E of Martinez de la Torre (UIMNH 3841-2) ; Tlacotalpan (USNM 46533 paratype of *N. r. blancharili*).

Diagnosis. A large *Natrix* usually with two preocular scales and with the color pattern, although similar to that of *rhombi f era*, greatly reduced on the sides and under surfaces of the body. Among sixteen specimens, a small lower preocular is present on both sides of the head in twelve (75%) of them. This has a tendency to extend backward beneath the eye, in several cases meeting the lowermost postocular (which also encroaches beneath the eye) , so that the upper labials are cut off from the orbit. Among ninety other snakes of the subspecies *rh ombi f era* and *blanchardi* from farther north in Mexico, there are two preoculars in only nine instances (5%) ; they occur on one side of the head in five specimens and on both sides in only two.

For John E. Werler, of the San Antonio Zoo, who is contributing much to our knowledge of life histories of Mexican reptiles.

In *werleri* the middorsal markings are normally conspicuous and dark (unlike *blanchardi* in which all dark markings are weakly defined or lacking entirely), but the pattern on the flanks and under surfaces is far less distinct than in average specimens of *rhombifera*. The reduction of pattern on the flanks is caused by the encroachment of light pigmentation on the scales; all really black or dark brown pigment is confined to the edges of the scales or to the skin between them. In *rhombifera* there are well-defined black maculations on the belly throughout its length and also beneath the tail; in *werleri* these are usually lacking altogether on the anterior part of the belly, but are represented posteriorly by faint, cloudy markings; the under side of the tail is well patterned as in *rhombifera*.

Description of Holotype. Head scutes the same in number and arrangement as in other races of the species. Two nasals, the anterior bearing the nostril entirely within it. Loreal irregular in shape, higher than long, extending obliquely downward to the rear, and displacing the lower preocular toward the eye. Two preoculars, the lower about one-fourth the size of the upper. Three postoculars, the lowermost extending well forward under the eye and nearly reaching the lower preocular. One temporal in the first row, two in the second, and three in the third. Supralabials 8, the 7th the largest on the left (6th and 7th about subequal on the right); the 4th entering the orbit. Infralabials 11, the 6th the largest, the first pair meeting on the midventral line; first 5 on each side in contact with the corresponding chin shield. Two pairs of chin shields, all approximately the same length. There are no chin tubercles, although in some of the larger male paratypes of *werleri* such tubercles are well developed.

Dorsal scales with two apical pits. Scale rows 25-23-21, all carinate throughout the length of body and tail. The decreases, expressed in the Dowling system (*on. cit.*), are:

$$25 \frac{5+6(78)}{5+6(74)} \quad 23 \frac{5+6(95)}{5+6(95)} \quad 21 \quad (142)$$

The ventrals, as shown by the formula, are 142, plus a divided anal plate; subcaudals 85 pairs. No spine at tip of tail. Total length 787 mm.; tail length 220 mm.; tail length/total length 28 per cent.

The dorsal color pattern consists of a series of dark markings on a ground color of olive brown and orange brown. In the middorsal area there is a series of black spots, irregular in shape but involving 4 or 5 scales in width and $1\frac{1}{2}$ to 2 scales in length; the spots are separated from one another by the length of about 3 scales. On each side of the body and alternating with the black spots is a series of 28 dark lateral blotches (counting from head to anal region) that are 2 or 3 scales in width and

which involve the 1st to the 7th or 8th rows of scales. Narrow, irregular, and oblique dark lines connect the lateral blotches with the middorsal spots. Both the oblique lines and the lateral dark markings are relatively inconspicuous ; black pigment upon them is largely confined to the skin between the scales and can best be demonstrated when the scales are pushed apart with the fingers. All markings, even the middorsal spots, are obscure in the neck region, but they become progressively more prominent toward the rear of the body. The pattern is continued onto the tail, and there it is quite conspicuous.

On the nape of the neck there are two narrow, poorly-defined, parallel dark stripes. These average less than a scale in width and are separated from each other by the width of about 3 scales. They start posterior to the parietal scutes, continue caudad for the length of about 6 scales, are interrupted by the ground color for the length of 2 or 3 scales, and then continue for about the length of 7 more scales.

The general ground color of the middorsal region is Saccardo's Umber, on the flanks it is Snuff Brown, and on the first row of scales Ecu-Olive. The sides of the neck are Olive Lake. The dark elements of the pattern are irregularly and rather vaguely surrounded by orange brown. The skin between the scales in these orange brown areas is Cinnamon.

Top of head nearly plain Saccardo's Olive, but with vague and slightly darker markings on the frontal and parietals, suggesting that the dark stripes of the nape are continued forward, meeting on the frontal. The mental plate, the four anterior supralabials, and most of the last supralabial are Saccardo's Olive. The remainder of the labials, both upper and lower, are yellow. The posterior borders of the scutes are dark olive gray. Pupil of eye black ; iris Hazel. Tongue completely black except for slightly grayish tips.

The belly is light yellow (Naples Yellow), which color starts on the chin and extends backward to the tip of the tail. There is a strong and continuous wash of Honey Yellow down the center of the belly. The anal plate is washed with Orange-Cinnamon. Beginning about a third of the way back from the head, there is a double row of dark rounded markings, one row on each side of the belly. There are not more than two spots (one left and one right) on any one ventral scute, but they are arranged (longitudinally) by ones, twos, or threes with unmarked ventrals between the groups. The most anterior of these spots are faint, rather nebulous, and grayish-green in coloration. Posteriorly they become darker and better-defined and are continued on the subcaudals to the tip of the tail.

Range. From central and southern Veracruz eastward to east central Tabasco.

3. When I reviewed the races of *Natrix valida* (Conant, 1946), only thirty-one specimens were available for study from the mainland of Mexico, and most were from the northern part of the range. The few snakes from southern localities (three females and an aberrant juvenile male) all had low ventral counts, and I suggested that the acquisition of additional material from Guerrero might prove to be of considerable interest. This presumption has now been borne out. A series of specimens from the Laguna Coyuca, plus two others from Michoacan, indicate there is a recognizable southern population which may be known as

Natrix valida isabelleae, new subspecies

Holotype. American Museum of Natural History, No. 73171, an adult collected October 8 or 9, 1949, at Pie de la Cuesta, Laguna Coyuca, Guerrero, by Roger Conant.

Paratypes (listed by localities). COLIMA (USNM 31384); Manzanillo (AMNH 19590). GUERRERO: Laguna Coyuca, at Pie de la Cuesta [the type locality—hence paratopotypes] (AMNH 73172-73178); (CM 29650-57); (UMMZ 80938, 108012). MICHACAN: Coahuayana (UMMZ 108011); point of San Juan de Lima, at Puerto de Tamarindo (UMMZ 108010).

Diagnosis. A medium-large *Natrix* characterized by the rich chocolate coloration of the dorsum and by a low ventral count. In snakes of the subspecies *valida*, the dorsal coloration is light gray or pale olive gray. In *celaeno*, the dorsum is highly variable; it may be the same as in the subspecies *valida* or it may be black with a light lateral stripe on each side of the body (see Conant, 1946, p. 266-7). The ventrals in males of *isabelleae* vary from 133 to 136, mean 134.8; in females from 131 to 137, mean 133.6. The corresponding figures for *valida* are: males 141 to 147, mean 143.6; females 136 to 148, mean 142.1. In *celaeno* the ventral counts are: males 138 to 149, mean 144.3; females 136 to 148, mean 143.4.

Description of Holotype. Head shields the same in number and arrangement as in other races of the species. Nasals two, the anterior bearing the nostril entirely within it. Loreal longer than high; longest at its base. One preocular and three postoculars. One temporal in the first row, two in the second, and three in the third. Supralabials 8, the 6th the largest; the 4th and 5th entering the orbit. Infralabials 10, the 6th the largest, the first pair meeting on the midventral line; first 5 on each side in contact with the corresponding anterior chin shield. Two pairs of chin shields, the posterior longer than the anterior.

4 Named for my wife, Isabelle Hunt Conant, who was with me when the type was collected and without whose presence and assistance our 1949 expedition to

A few of the dorsal scales in the nuchal region have paired apical pits. Scale rows 21-19-21-19-17; all carinate throughout the length of body and tail. The increases and decreases, expressed in the Dowling system (*op. cit.*), are as follows:

$$21 \frac{3+4(13)}{4+5(12)} \quad 19 \frac{+10(32)}{+10(32)} \quad 21 \frac{8+9(56)}{D+9rt.(62)} \quad 19 \frac{3+4(80)}{3+4(79)} \quad 17 (132)$$

The scales in the middorsal region from about the level of ventral 32 to ventral 62, inclusive, are irregular, and counts of 20 instead of 21 are possible in some places. As is shown by the formula, the increase from 19 to 21 results from the introduction of a paravertebral row of scales on each side. The reduction again to 19 is even more unorthodox, since both rows are dropped on the *right* side of the body ; the change that should occur on the left results from the loss of the paravertebral row on the right.

The ventrals, as indicated, are 132, plus a divided anal plate; sub-caudals 73 pairs. Tail terminated by a short, relatively blunt spine.

Total length 814 mm. ; tail length 209 mm. ; tail length/total length 26 per cent.

General dorsal coloration rich brown and virtually devoid of markings except for four rows of small black spots extending from the head to the base of the tail. Top of head Mummy Brown, middorsal area Mars Brown, the three lowermost rows of scales Cinnamon-Brown. Top and sides of tail unmarked and Russet in coloration. The chocolate brown dorsal coloration encroaches upon the ends of the ventrals and the edges of the subcaudals throughout the entire length of the body and tail, and the same general rich brownish hue is continued forward onto the labials and the outer edges of the chin shields. The sutures between most of the lip plates (both upper and lower) are partly edged with black. Pupil of eye black, narrowly rimmed with gold ; iris brown, slightly darker than top of head. Tongue pink at base ; tip black.

The black spots appear chiefly upon scale rows 4 and 8. At the point where the rows drop from 19 to 17, the dark spots shift from row 4 to the new row No. 4, thus moving up one scale. The spots on row 8 do not shift, hence they are on the new row No. 7 on the posterior part of the body. There are numerous small irregular black marks, confined chiefly to the edges of the scales, along the common sutures of the ventrals and the first row of scales and between the 1st and 2nd rows of scales. These markings, like the larger and better defined black spots on the 4th and 8th rows, are continuous from head to base of tail.

The ventral coloration gradually changes from Ivory Yellow on the chin to the Orient Pink of virtually all of the under surface. Anal region Pinkish Cinnamon. Under side of tip of tail Mikado Brown.

There is a small scattering of grayish stippling on the center of the belly anterior to the anus, and there is some grayish-brown stippling under the tail, this being largely confined to the median axis where it appears as a dusky, rather faint line between the two rows of subcaudals.

Range. From Manzanillo, Colima, southeastward along the west coast of Mexico to the Laguna Coyuca, 8 miles northwest of Acapulco, Guerrero.

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Literature Cited

Clay, William Marion

- 1938 A new water snake of the genus *Natrix* from Mexico. Ann. Carnegie Mus., vol. 27, art. 15, p. 251-253, pl. 25.

Conant, Roger

- 1946 Studies on North American water snakes--II, the subspecies of *Natrix* . *valida*. Amer. Midl. Nat., vol. 35, no. 1, p. 250-275, fig. 1-2.

Dowling, Herndon G.

- 1951 A proposed method of expressing scale reductions in snakes. Copeia, no. 2, p. 131-134.

Ridgway, Robert

- 1912 Color standards and color nomenclature. Privately printed, p. i-iv + 1-44, pl. 1-53.

Sanchez, Pedro C.

- 1936 Estudio hidrologico de la Republica Mexicana. Instit. Panamericano Geog. Hist., no. 17, p. 1-9, 19 maps and charts.

Smith, Hobart Muir and Edward Harrison Taylor

- 1945 An annotated checklist and key to the snakes of Mexico. U. S. Nat. Mus., Bull. 187, p. 1-239.

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